Local Government Annual Report

Operational Highlights – Biosecurity Queensland

2023-2024

Queensland Government

This publication has been compiled by Biosecurity Queensland, Department of Agriculture and Fisheries

The Department of Agriculture and Fisheries proudly acknowledges all First Nations peoples (Aboriginal peoples and Torres Strait Islanders) and the Traditional Owners and Custodians of the country on which we live and work. We acknowledge their continuing connection to land, waters and culture and commit to ongoing reconciliation. We pay our respect to their Elders past, present and emerging.

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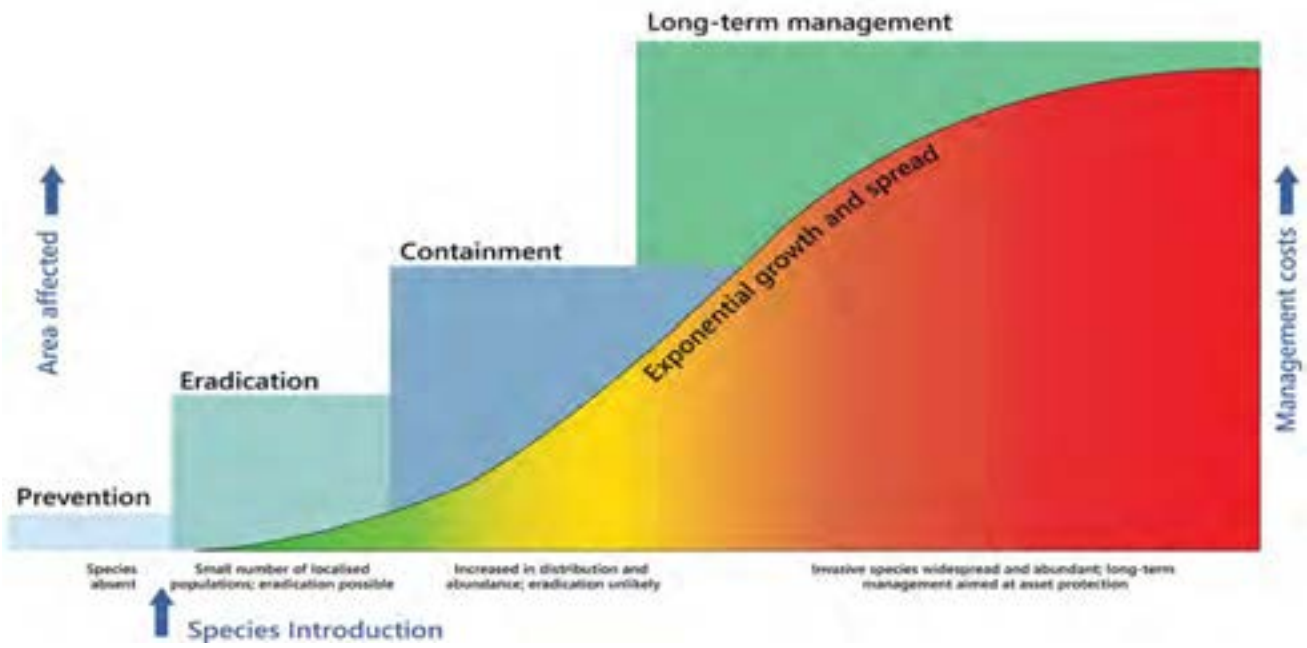
Introduction

Invasive plants and animals have significant impacts on Queensland's environment, economy and society. Preventing and managing biosecurity risks are everyone's responsibility and requires coordinated action and cooperation. Biosecurity Queensland, as part of the Department of Agriculture and Fisheries (DAF), has continued to work collaboratively to prevent or minimise these impacts with stakeholders including local governments, state and federal government agencies, industries, community and Indigenous groups.

There is a comprehensive national system for preventing and managing invasive biosecurity risks, with border control as the first line of defence. Biosecurity Queensland is required to play an integral role in managing the pest and weed risk within the state. This is achieved by:

- **preventing** the entry, spread and establishment of new invasive species,
- **responding** to new incursions and eradicating these where it is feasible to do so, and
- **enhancing** the capacity and capability of local governments to regulate the management of established invasive plants and animals in Queensland.



Generalised invasion curve (courtesy DPI Victoria)

Biosecurity Queensland's operational focus is on the left-hand side of the invasion curve, the early stages of prevention and eradication rather than the later stages of established invasive species management. Prevention and early intervention are the most cost-effective management strategies and reduce the risks and potentially adverse consequences of invasive species incursions.

Queensland's successful biosecurity system to date has resulted in:

- 41 invasive species eradicated or prevented from establishing in Queensland (including one species managed under a nationally cost-shared eradication program)
- 23 invasive species in the proof of freedom phase of an eradication program
- 17 invasive species in the control phase of an eradication program (including seven species managed under nationally cost-shared eradication programs).

Early detection and control are critical – a biosecurity officer applying herbicide to a cha-om (Senegalia insuavis) plant.

DAF supports local governments and communities through its investment in invasive plant and animal management, policy, research and operational services.

Funding for the operational component of Biosecurity Queensland's Invasive Plants and Animals Program (IP&A) is primarily provided from the State (80%) and supported by the Land Protection Fund (20%). The Land Protection Fund is a system of payments collected from landowners by local governments on behalf of the State in accordance with the *Biosecurity Act 2014* (the Act). The Land Protection Fund supports a range of invasive plant and animal management initiatives in Queensland, including:

- Wild Dog Barrier Fence – contributions from landowners in nine local governments and matched by the State. This pays for inspections, maintenance and repair of the 2,500 km Wild Dog Barrier Fence.
- Darling Downs-Moreton Rabbit Board – contributions from landowners in eight local governments within the board district. This pays for the operations of the Darling Downs-Moreton Rabbit Board, including maintaining the rabbit fence and controlling rabbits inside the protected area.
- Plague Pest Contingency Fund – contributions from landowners in 19 local governments that enables Biosecurity Queensland to assist landowners in responding to locust outbreaks in key cropping areas of Queensland. The fund is capped at $500,000 and is only collected when the contingency fund is under this ceiling (not applicable in 2023-24).
- Research and on-ground – contributions from landowners in all local governments. These funds are used to undertake activities that help local governments manage invasive plants and animals. This includes funding the applied invasive species research undertaken by the IP&A Science team, education and training programs about invasive species, and actions to prevent and eradicate invasive species in Queensland.

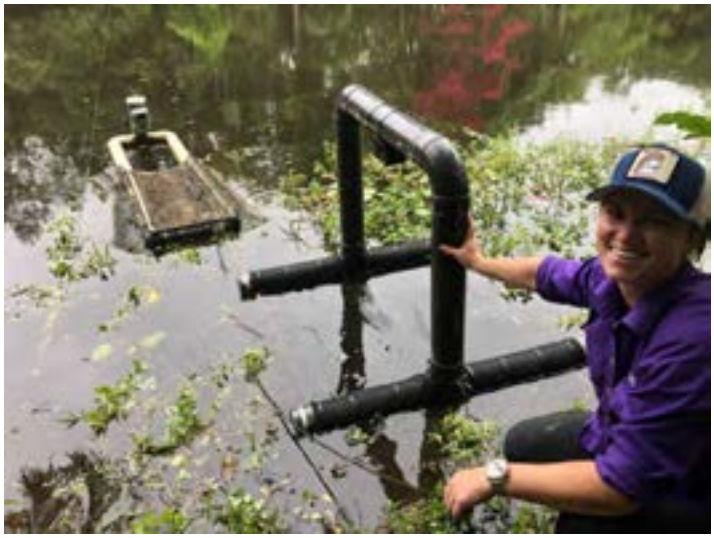
This report provides a comprehensive overview of the operational activities of the IP&A Program that was partially funded by the 'on-ground' component of the Land Protection Fund for the 2023-24 financial year.

Prevention

Biosecurity officers undertake a range of preventative actions to reduce the threats of invasive species becoming established. These include pre-emptive surveillance of high-risk species not currently present within Queensland (based on risk assessments and identification of entry pathways), landscape delimitation (presence and absence), sentinel site monitoring (based on species such as bats which are known vectors of seed spread) and compliance activities.

Innovative technologies have been adopted and incorporated with current techniques to increase the capacity for Biosecurity Queensland to prevent the establishment of new invasive incursions. Preventative methods include:

- drones to survey inaccessible terrain
- acoustic and light traps for exotic amphibian detection
- basking platforms to detect exotic turtles
- searches of sentinel sites (such as bat roosts)
- surveillance of historical detection sites
- identification and monitoring of high-risk invasion pathways
- reporting databases used by citizen science networks (iNaturalist, Weedspotters)
- monitoring of online sales platforms (social media, Gumtree etc)
- web-scraping tools (to detect illegal sales of invasive species)
- compliance activities (education through to prosecution).



Left: *Remote pilot aircraft extended line of sight training.* ***Right:*** *A biosecurity scientist deploys a juvenile turtle surveillance pontoon at Burpengary.*

Surveillance

Effective surveillance helps in early detection, which is crucial for preventing the establishment and spread of invasive species. Risk assessments are conducted to identify high-risk invasive species, and the potential pathways for introduction into Queensland. Surveillance is then undertaken in specific locations to identify the presence of any new incursions. The earlier a new invasive species

is detected, the more cost-effective the subsequent response becomes, and the higher the likelihood of successful eradication.

Asian black spined toad surveillance

Asian black spined toads (*Duttaphrynus melanostictus*) pose a serious risk to Queensland and are a high priority surveillance target for Biosecurity Queensland. If they naturalise, they are likely to have impacts comparable to those of the cane toad. While not known to occur in Australia, the species is present in closely neighbouring countries (such as Indonesia, Timor-Leste and Papua New Guinea) and our south-east Asian trading partners. Asian black spined toads are regularly intercepted at pre-border (customs) checkpoints.

In North Queensland, biosecurity officers maintain a collaborative relationship with Ports North in Cairns. The Port of Cairns was identified as a high-risk entry point due to the volume and frequency of shipping traffic from South-east Asia (including wind turbine components). Six live capture light traps were deployed for a six-month period in 2023 to coincide with wind turbine deliveries. No Asian black spined toads were captured, and traps will be redeployed if shipments for the Chalumbin Wind Farm restart (currently delayed pending World Heritage impact assessments).

Despite not catching any Asian black spined toads at the Port of Cairns, the traps have enabled Ports officers to significantly reduce the cane toad (*Bufo marinus*) population. This helps to prevent the spread of these invasive amphibians to islands in the Torres Strait, Great Barrier Reef, and Pacific region that are currently cane toad free.

In Central Queensland, surveillance for Asian black spined toads was conducted near the Port of Hay Point, Gladstone Port and Rockhampton Airport. These sites were chosen due to their proximity to fresh water, access and delivery of goods from overseas. Live trapping using acoustic traps (playing an Asian black spined toad call) was conducted in collaboration with North Queensland Bulk Ports and other landholders. Traps were deployed for a total of 58 trap nights with no Asian black spined toads detected.

The absence of Asian black spined toad detections provides a level of confidence that this species is not currently present within the state and demonstrates the importance of preventative surveillance and early detection to facilitate eradication if an incursion is discovered. Additional research is underway to investigate the effectiveness of a range of additional Asian black spined toad calls for incorporation within the traps as an acoustic playlist.

Left: *Asian black-spined toad (image use courtesy of Victoria's Department of Environment and Primary Industries).* ***Right:*** *Cane toads captured in a trap at Gladstone Port*.

Exotic turtle surveillance

Exotic turtles pose a significant risk to Queensland due to their ability to inhabit various natural and artificial habitats, and potential to outcompete native species for resources. Ten species of exotic turtles have been detected in Queensland, either at large or being illegally kept. This includes the red-eared slider turtle (*Trachemys scripta elegans*), which is listed as one of the world's 100 worst invasive species. During the 2023-24 period there were no detections of exotic turtles at large. The last known detection of a red-eared slider turtle at large occurred in November of 2022, and the red-eared slider turtle eradication project has been incorporated into state-wide exotic turtle surveillance.

One illegally kept red eared slider turtle was surrendered to Biosecurity Queensland by the owner at the Gold Coast. The turtle was in poor condition, highlighting the animal welfare issues associated with the illegal keeping of exotic animals. The presence of exotic turtles in the illegal pet trade means the risk of these animals being dumped into the wild remains high, and exotic turtles are a priority for surveillance.

Surveillance for exotic turtles is principally undertaken using basking surveillance platforms. Platforms deployed in areas where red eared slider turtles may inhabit also undergo DNA testing to compliment the monitoring cameras fitted to the basking platforms. This improves the probability of detecting red eared slider turtles if they are present. All DNA testing results for the 2023-24 year were negative.

Biosecurity Queensland has been working with the company eVorta to develop artificial intelligence to automatically detect turtles from the tens of thousands of images captured from the surveillance cameras. The artificial intelligence program has been developed and a trial will commence in the 2024-25 financial year.

Left: *Turtle surveillance platform deployed at Mareeba.* ***Right:*** *Native turtles photographed using a surveillance platform at Mullers Lagoon, Bowen*.

Surveillance for exotic turtles in Queensland is targeted at sites where exotic turtles were previously detected, along with proactive surveillance of waterbodies that are accessible to the public where exotic turtles may be dumped. There are two locations in Queensland where red eared slider turtles are known to have established a naturalised population, at Burpengary and Robina.

At Burpengary, each individual red eared slider turtle was identified by their unique markings from images captured by the surveillance cameras. To date, seven red eared slider turtles have been captured and removed from this location. The last known turtle, a mature male, was last detected in November 2022. His location and status are currently unknown, and surveillance continues.

Two red eared slider turtles have been captured and removed from West Lake in Robina. No exotic turtles have been detected using the surveillance platforms or from eDNA swabs and water testing. A trapping program was conducted over the summer of 2023-24 with only native turtles captured.

Surveillance programs were also completed at Neerdie near Gympie, Benowa, Keperra and Mullers Lagoon in Bowen. Visual surveillance using a spotting scope was implemented at locations with poor access and where there is a risk of theft of platforms and equipment. One community report was received of a red eared slider turtles at Notch Point. Visual surveillance was conducted by biosecurity officers, with no exotic turtles detected. Two surveillance cameras deployed at the Goose Ponds in Mackay were unfortunately stolen with only five days of images recorded.

Left: *"Gamera" the red eared slider turtle was surrendered to Biosecurity Queensland. Note the badly deformed shell due to poor animal husbandry whilst being illegally kept.* ***Right:*** *A biosecurity officer conducts visual surveillance for exotic turtles at Mullers Lagoon, Bowen*.

Biosecurity officers in North Queensland collaborated with Townsville City Council Water, Cairns Regional Council and Mareeba Shire Council to deploy surveillance platforms to monitor for exotic turtles and other exotic reptiles at Douglas Wetlands on the Ross River in Townsville, Cairns Centenary Lakes, Warrina Lakes in Innisfail and Mareeba's Bicentennial Lake. Platforms were deployed for over six weeks in each site, with tens of thousands of photos captured and reviewed. No exotic turtles were detected at any of the locations.

Biosecurity officers noted that no juvenile exotic turtles had ever been detected using existing surveillance techniques. In response, biosecurity scientists have designed, built and trialled a new surveillance pontoon to detect juvenile turtles.

Juvenile turtles bask on the surface of the water as, due to their small size, the warmer surface water is adequate to stimulate their metabolism. A research project was created to develop a technique that would detect juvenile turtles, taking their basking behaviour into account. The project has trialled a pontoon which creates a micro-climate of warmer water between the floats to encourage aquatic basking. A wide-angle camera is mounted beneath the main structure with a top-down view to record images of the entire basking area.

A juvenile red eared slider turtle detected by a pontoon camera at Fairfield.

The pontoons were tested in early 2023 in Fairfield, New South Wales where there is a breeding population of red eared slider turtles. The trial was successful, with multiple detections of juveniles. Pontoons have now been deployed at Burpengary and Robina to assist with determining if any juvenile turtles are present. There have not been any detections to date.

High-risk cacti surveillance

Cacti pose one of the greatest threats to Queensland's agricultural and environmental regions, as they are well suited to much of the environment and can spread rapidly across the landscape. The threat of cacti species is increased due to their popularity as a garden ornamental, and availability via interstate and international supply.

Species identified as high-risk surveillance targets include Eve's pin cactus (*Austrocylindropuntia subulata*), jumping cholla (*Cylindropuntia prolifera*), bunny ears cactus (*Opuntia microdasys*), *O. puberula*, wheel cactus (*O. robusta*), blind cactus (*O. rufida*), violet prickly pear *(O. gosseliniana*), Englemann's prickly pear (*O. engelmannii*) and Aaron's beard cactus *(O. leucotricha*). A new factsheet has been published to increase awareness of these species.

***Left:** A prohibited Engelman's prickly pear (Opuntia engelmannii) detected through high-risk cacti surveillance.*
***Right:** A prohibited O. puberula detected at Thargomindah.*

To complement compliance activities, biosecurity officers conducted road transects and inspections at green waste collection points. In the past 12 months 657 km of transects were surveyed across 56 towns in central and western Queensland. These surveys led to 14 individual compliance actions with multiple high-risk cacti seized and destroyed. In addition, four green waste collection points were inspected for high-risk cacti leading to the detection of a suspected wheel cactus in western Queensland.

A number of sites were surveyed in southern Queensland based on historic records of detections, and a range of species were successfully identified and controlled, including Riverina pear *(Opuntia elata*) at Cunnamulla, Eulo, and Amby; bunny ears cactus *(O. microdasys*) at Charleville and Roma; *O. puberula* at Thargomindah; Eve's pin cactus *(Austrocylindropuntia subulata*) at Wallumbilla; sulphur cactus *(O. sulphurea*) at Wallumbilla and common prickly pear *(O. stricta*) at Charleville, Wyandra and Cunnamulla.

High risk pathway surveillance

Left: *Joint surveillance between Biosecurity Queensland and Murweh Shire Council of the Cooladdi town dump.*
Right: *A prohibited wheel cactus (Opuntia robusta) detected at the Windorah dump.*

Biosecurity officers in South Queensland have worked with local governments to identify high risk pathways for the introduction of invasive species from other states and implemented active surveillance methods for early detection of target species. Some of the most common high-risk pathways have been identified as vehicle washdown facilities, public camping reserves, dumps, saleyards and showgrounds.

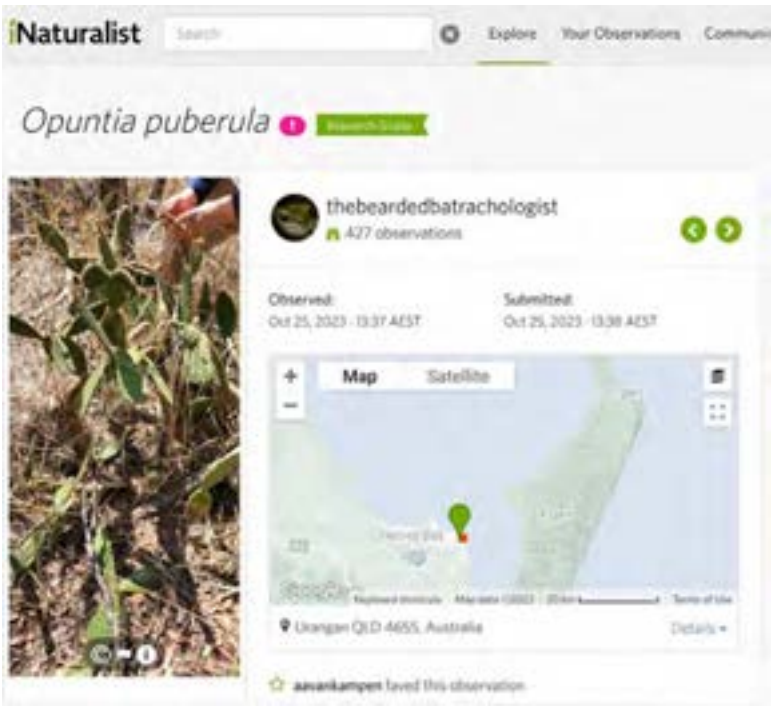
Surveillance of these locations is conducted to identify regulated biosecurity matter, especially any newly established weeds or incursions that may have been introduced by interstate travelers. Any new incursions were immediately treated, mapped and reported to the relevant local council.

Officers also conducted an awareness campaign by providing fact sheets and information to stakeholders that may encounter restricted and prohibited plants and animals during their normal business or work-related activities. The campaign targeted local markets, nurseries, pet shops, aquariums, fishing clubs and veterinarians.

iNaturalist

iNaturalist is a free global citizen science network that allows the millions of users to record the presence of plants and animals via an app on their device. The system is enabled by artificial intelligence that automatically identifies the plant or animal from photographs taken. This identification is then verified by other users. If multiple users confirm the identification, it is allocated a category of ‘research grade’ and uploaded into the Atlas of Living Australia (ALA). Biosecurity Queensland has an agreement with ALA to report any detections of notifiable invasive species each week.

With more than 18,000 active users in Queensland, this arrangement is proving to be a powerful surveillance tool for invasive species. As an example, the presence of the highly invasive prohibited species *Opuntia puberula* in Urangan was reported via iNaturalist. Biosecurity officers were alerted, responded to the report and destroyed the infestation. This has prevented the cactus from becoming widely established and forming an expensive and potentially intractable problem.



Left: *The prohibited and highly invasive cactus Opuntia puberula was detected and reported via the iNaturalist app.* ***Right:*** *Officers from Biosecurity Queensland and Fraser Coast Regional Council remove the cactus from a reserve in Urangan near Hervey Bay.*

Invasive ant surveillance

Invasive ants have potential to cause serious social, economic, and environmental impacts. Biosecurity Queensland leads the eradication of red imported fire ants and electric ants and has successfully eradicated browsing ants (*Lepisiota frauenfeldi*) and tropical fire ant (*Solenopsis geminata)*. To support existing ant eradication programs, biosecurity officers undertake surveillance of high-risk sites to demonstrate proof of freedom.

Sites are identified for periodic and opportunistic surveillance based on pathways involving international shipping, military movements, global yachting, movement of materials and links with other known invasive ant infestation sites in Queensland.

Left: *A biosecurity officer conducts an ant survey at Notch Point south of Mackay.* ***Right:*** *Invasive ant surveillance at Carmila Beach Camping Reserve*.

In 2023-24, 78 surveys were conducted across Central Queensland involving 60 sentinel and seven community-reported sites. Survey transects totalled 49.2 km with 3979 lures used. Transects were established at council depots and set-down areas, marinas, Shoalwater Bay Training Area and Woolcock Barracks in Rockhampton, landfill and waste transfer sites and the Port of Mackay. With consideration of potential intrastate movement of red imported fire ants, surveillance now includes freight depots, landscape suppliers, camping areas, development sites and industrial areas. Assistance in conducting surveys was provided by councils, Department of Defence and port officers.

Tramp ant surveillance was conducted at several locations including the Charters Towers showground (following a statewide 4-wheeled drive event), and at high-risk entry points including waste transfer stations, caravan parks and trucking depots at locations including Charters Towers, Etheridge, Croydon, Karumba, Normanton, Mt Isa, Napranum, Weipa, Cairns and Cooktown.

There were no detections of target species, however Singapore ants (*Trichomyrmex destructor*) and African big-headed ants (*Pheidole megacephala*) continue to be found at multiple sites.

Biosecurity Queensland supports Whitsunday Regional Council in managing yellow crazy ant infestations that occur within the Shute Harbour, Airlie Beach and Hamilton Island areas. Support has included invasive ant identification, delimitation assistance at Shute Harbour and Woodwark, participation in Yellow Crazy Ant Committee meetings and specialist technical advice.

Biosecurity officers delivered information, training and tools to build local government regulatory skills for the management of Yellow Crazy Ants in the Townsville and Cairns, and to facilitate participation in sentinel surveillance at council-owned waste transfer stations. Charters Towers Regional Council and Napranum Rangers have assisted with sentinel surveillance in 2023-24.

African black sugar ant response

Biosecurity Queensland partnered with local governments to undertake surveillance for African black sugar ants (*Lepisiota incisa*) in support of the National *Lepisiota incisa* Eradication Program (NLIEP), based in Western Australia.

African black sugar ants are an exotic invasive ant that can form super colonies and impact on the environment by reducing biodiversity and out-competing native ant species. The species has been observed harvesting plastic and has the potential to damage electrical equipment and infrastructure. First detected in Perth in 2020, 14 clusters have now been identified.

Tracing by NLIEP staff identified five potential incursion sites in Queensland linked to a caravan parts supplier in Western Australia. They also identified several potential sites located in Victoria, South Australia, Northern Territory and New South Wales.

Biosecurity Queensland responded to the report, conducting surveillance at Loganholme, Northgate, Forest Glen, Bundaberg and at two sites in Townsville. Biosecurity officers attended each site and deployed two types of lures, one containing syrup and the other sausage. Lures were placed five metres apart and collected after one hour.

Left: *Officers from Biosecurity Queensland and Brisbane City Council prepare lures for surveillance at Northgate.* ***Right:*** *A biosecurity officer deploys a lure on the perimeter of a commercial business*.

A total of 475 lures were deployed, with 279 ant samples collected and submitted to the National Electric Ant Eradication Program for identification. No African sugar ants were detected in any of the samples collected. A number of established exotic species, including African big-headed ants (*Pheidole megacephala*), Singapore ants (*Monomorium destructor*) and black crazy ants (*Paratrechina longicornis*) were detected.

Spiked pepper

Spiked pepper (*Piper aduncum*) is a quick-growing, small tree native to South and Central America. It is a significant weed in Papua New Guinea and other Pacific and South-East Asian countries. It is not known to occur in Queensland but has the potential to become a serious invasive plant, readily invading disturbed habitats, forest margins, roadsides, waterways, and pastures.

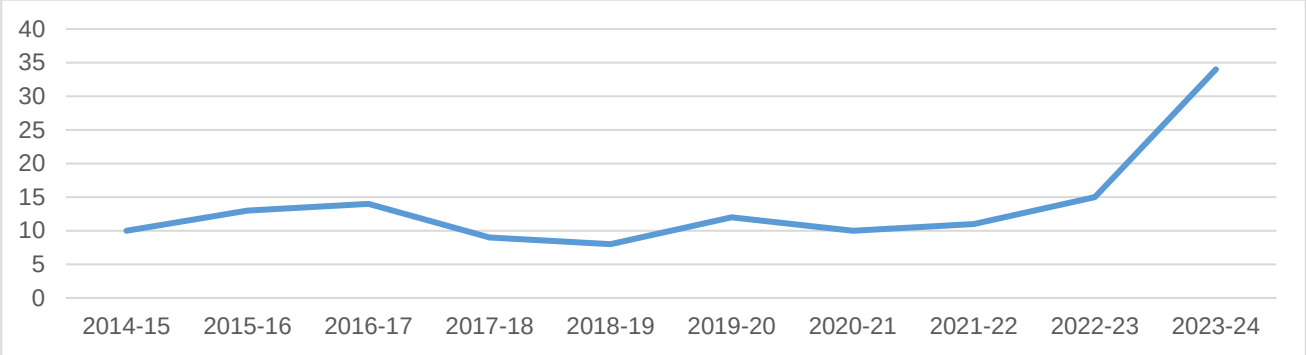
To enable early detection of spiked pepper, sentinel sites have been established after recognising flying foxes (fruit bats) as a likely vector of seed spread. If plants are present within the foraging range of flying foxes, it is probable that seedlings will germinate under roosts. Twenty-six roosts have been identified as sentinel sites, with 24 of these surveyed by biosecurity officers in 2023-24. There were no detections.

Siam weed surveillance

Siam weed (*Chromolaena odorata*) is well established in parts of northern Queensland, with the only known incursion outside of North Queensland being at Shoalwater Bay Training Area in 2013. To detect any spread into Central Queensland as early as possible, biosecurity officers have identified potential spread pathways and priority areas for surveillance, and shared this information with local government, Department of Transport and Main Roads and other stakeholders. High priority areas from Bowen to Carmila Beach were surveyed by biosecurity officers, including five rest areas and one high use camping area, with tracks totalling 3.6 km. No Siam weed was detected during surveillance.

Compliance

Biosecurity officers work to ensure the *Biosecurity Act 2014* (the Act) is effectively enforced to prevent or minimise the risks of a biosecurity event occurring. This work is primarily aimed at preventing the illegal importation, possession and trade in regulated invasive species. Regulating the Act has had the largest impact on preventing invasive plants and animals establishing or forming new infestations in Queensland. Biosecurity Queensland works with local governments, other government agencies, Queensland Police and the Commonwealth Department of Fisheries and Forestry (DAFF) to investigate alleged offences.



Prohibited matter detections in Queensland by financial year.

Biosecurity officers have investigated 301 compliance cases relating to invasive biosecurity matter across Queensland during the financial year. These investigations resulted in the seizure of several exotic invasive species which have not previously been detected in Queensland, including a diamondback terrapin (*Malaclemys terrapin*), an alligator snapping turtle (*Macrochelys temminckii*), and several hognose snakes (*Heterodon nasicus*). There has been a significant increase in prohibited exotic animal detections over the reporting period, with the highest number of seizures on record (34).

Exotic animal investigations

The most serious offences relate to the illegal keeping of exotic animals, which is associated with transnational wildlife crime. In a joint operation with Queensland Police and wildlife officers from the Department of Environment, Science and Innovation on the Gold Coast, biosecurity officers seized three veiled chameleons being illegally kept in a private residence. The offender was prosecuted and fined $1500.

Left: *A veiled chameleon (Chamaeleo calyptratus) seized from a residence on the Gold Coast.* ***Right:*** *One of three hognose snakes (Heterodon nasicus) seized from illegal keeping during two separate investigations*.

In a separate incident, a boa constrictor was found at large in a public park and reported by a member of the community. The animal was successfully captured by a local snake catcher and passed to Biosecurity Queensland. A diligent investigation by biosecurity inspectors using DNA and CCTV evidence located the offender, who was prosecuted and fined $4500. The magistrate noted the serious biosecurity risks created by the offender in releasing the snake. Biosecurity officers also assisted Douglas Shire Council with an investigation into the illegal keeping of ferrets (*Mustela furo*). The investigation resulted in four ferrets being seized and destroyed.

Pest fish

Control of aquatic invasive species is challenging, as they can be difficult to detect and monitor especially in large or deep waterbodies. Chemical control techniques are often limited, and physical removal can be labour-intensive and costly. Once pest fish become established, they can be nearly impossible to eradicate so early intervention is more cost-effective than trying to locate, control or eradicate established populations.

Most pest fish incursions are believed to be caused by the illegal dumping of aquarium contents, however there is also potential for invasive fish in ponds and contained dams to escape into nearby waterbodies during heavy rains and flooding events. A report of ornamental pest fish at an Aloomba residence was inspected with 26 Koi and mirror carp detected and destroyed. Carp (*Cyprinus carpio*) are restricted matter and naturalisation of species has occurred in southern Queensland, leading to severe degradation of creeks, rivers and water storages.

Carp seized from a pond south of Cairns.

Invasive plant investigations

European blackberry

European blackberry is highly invasive, quickly infesting large areas and forming thickets which can provide shelter for feral animals including rabbits and foxes. Consequently, it is listed as a Weed of National Significance. European blackberry currently infests approximately nine million hectares of land in Australia, and has a potential distribution range from cool to warm temperate and sub-tropical climates. European blackberry is grown commercially for both fruit and honey production, and weedy infestations may occur where commercial crops are not properly managed. Blackberries are a popular fruit and are sold at most grocery stores.

The species of European blackberry *Rubus anglocandicans* and *Rubus fruticosus* aggregate are scheduled as category 3 restricted matter under the Act. *Rubus fruticosus* aggregate is a complex of

some 15-20 microspecies, including hybrids, which are illegal to distribute from or within Queensland without a biosecurity matter permit.

In response to a report of the alleged sale of European blackberry plants, an investigation was initiated by Biosecurity Queensland. The origin of the plants was traced to a wholesale nursery in the Logan area. Further enquiries resulted in the tracing of tube stock to retail and wholesale nurseries across Queensland.

Left: *A European blackberry plant for sale from a retail outlet in Queensland.* ***Right:*** *A cultivated blackberry plant, along with other regulated plants, seized during an inspection of a residential property*.

There is a commercial interest to supply the domestic retail market in Queensland with berry plants, and differences in the legislative status of European blackberry across the states and territories has created confusion with national retail outlets. The blackberry species Chester thornless (*Rubus ulmifolius*) was determined to have not been properly identified by industry as an aggregate species, which is regulated in the State of Queensland.

In response to the information obtained, Inspectors from Biosecurity Queensland contacted wholesale nurseries and major retail chains to provide clarification of Queensland's legislative restrictions for European blackberry species. As a result, blackberry plants have been withdrawn from sale and destroyed. Major retail chains have assisted by ensuring the sale of European blackberry is restricted to states and territories where it is lawful to sell these species.

The objective of the Act is to minimise the risk of establishment and spread of weedy populations of European blackberry. This will be achieved through the prohibition of the propagation, supply and keeping of European blackberry for domestic purposes; and by allowing agricultural enterprises to grow European blackberry commercially to supply fruit to retailers under biosecurity matter permits to the ensure the biosecurity risks are managed. European blackberry, along with other invasive plant species regulated under the Act, will be seized by inspectors where members of the public commit a general biosecurity obligation offence by intentionally cultivating these species.

Senegalia species

Senegalia is a genus containing 222 acacia-like plants, including both native and exotic species. In their native habitat, Senegalia are found in rainforest, often along riverbanks, forest margins and in forest gaps. They are known to be invaders of disturbed soil (especially in proximity to rainforests) and

form dense thickets which can disrupt pastures, impacting livestock production. Two exotic species, cha-om (*Senegalia insuavis*) and soap pod (*Senegalia rugata*) were first detected in Queensland in the early 2000's.

Cha-om and soap pod are grown as a vegetable and for medicinal uses in south-east Asia. Senegalia species have proven to be highly invasive in Queensland's climate, and all exotic Senegalia are declared to be prohibited biosecurity matter in Queensland.

A language barrier and a cultural desire to use cha-om and soap pod has resulted in these plants being grown within residential properties and traded amongst local south-east Asian communities. These activities pose a serious biosecurity risk to Queensland's agriculture and environment. Biosecurity officers across Queensland are working to detect and destroy illegally kept cha-om and soap pod to prevent these species from establishing in Queensland.

Left: *A backyard in Strathpine overgrown by cha-om.* ***Right:*** *Potted cha-om plants being cultivated for distribution*.

A joint operation was established between Biosecurity Queensland, Moreton Bay City Council and Sunshine Coast Council to address the biosecurity risks posed by the illegal possession, cultivation and trade of prohibited Senegalia species. This operation was initiated following the detection of 116 Senegalia plants growing within a residential property in Strathpine in January 2024. Tracing and surveillance identified a further seven residential properties growing Senegalia. A total of 349 individual cha-om and soap pod plants have been detected to date, with biosecurity orders issued for the destruction of the plants.

In Cape York, an operation targeting properties in Weipa was executed following intelligence provided by Commonwealth Northern Australian Quarantine Service (NAQS) officers. This intelligence, in conjunction with surveillance resulted in the seizure of five cha-om plants across four properties. Two follow-up inspections were undertaken on properties near Cooktown to determine compliance with a biosecurity order. The compliance inspection resulted in additional plants being identified and removed on one of the two properties.

In Cairns Regional Council area, a re-inspection of several historical sites identified two re-offenders and multiple plants were seized and destroyed. Additionally, properties with gardens containing highly visible indicator species (South-east Asian culinary ingredients) were investigated, resulting in the detection and destruction of cha-om plants on a property in Redlynch and soap pod plants on a property in Miriwinni. Suppliers of south-east Asian culinary plants to markets in the Cairns area were identified and 30 market gardens were inspected by biosecurity officers, with five cha-om seized and destroyed.

***Left:** A cha-om plant illegally growing in a backyard for use in cooking. **Right:** A biosecurity officer inspects a cha-om plant in a garden*.

In Central Queensland, three new cha-om sites were detected during 2023-24 in Mount Julian, Proserpine and Mackay, with all plants subsequently seized by biosecurity officers. An additional cha-om plant was detected in Townsville by a Hinchinbrook local government officer after attending a Biosecurity weed identification workshop.

All detections and seizures of cha-om and soap pod have been in cultivated as potted plants or in gardens, however due to the potential detrimental impacts that Senegalias pose to agriculture and the environment, ongoing education about the legal consequences of cultivating these regulated species is essential to deter individuals from growing them. Biosecurity Queensland has developed fact sheets outlining the risks these species pose, and this educational material has been translated into various south-east Asian languages. Biosecurity Queensland has also provided advice on growing similar, legal species that can substituted for cha-om and soap pod, and biosecurity officers are working with communities to generate support for this approach.

Water mimosa

Water mimosa (*Neptunia oleracea* and *N. plena*) poses a significant threat to Queensland's waterways and wetlands. It is easily established, and under favourable conditions can form dense floating rafts of interwoven stems that can restrict water flow, prevent light penetration and reduce oxygenation of water. It is an Asian vegetable commonly cultivated in Thailand and Indo-China, and it easily propagated from seeds and stem sections from the parent plant. Although it is restricted matter, water mimosa has been subject to sale and distribution through Asian communities and gardeners.

In Cape York, biosecurity officers followed up reports from Commonwealth Northern Australian Quarantine Service (NAQS) officers regarding the illegal keeping of water mimosa at two properties in Weipa. Fortunately, landowners had abided by the information provided to them (pest fact sheets) and had controlled the plants in their possession.

Two follow-up inspections were conducted on properties near Cooktown to determine compliance with a biosecurity order. Compliance was achieved on both properties, with control requiring heavy machinery operated by licensed pest contractors (at the owner's expense).

Cactus compliance project

Left: *Engelmann's Cactus (Opuntia engelmannii) seized at Karumba* ***Right:*** *A blind cactus (O. rufida) detected being illegally offered for sale at a café in Tugun, Gold Coast*.

Invasive cacti pose a serious biosecurity risk to Queensland, and biosecurity officers have continued to investigate allegations of the illegal keeping and sale of regulated cacti. The invasive potential of cacti is well known, yet cacti remain a popular plant and the illegal ornamental trade of prohibited and restricted cacti increases the risks of these species becoming established. These species are marketed as hardy, low maintenance ornamental plants, however if dumped, they have the potential to rapidly spread into natural areas and establish populations that would require significant investment and effort to manage.

While no new species were detected, large numbers of prohibited and non-established cactus species continue to be detected and seized by biosecurity inspectors. A total of 112 investigations were conducted across the state, resulting in the seizure of 624 regulated cacti, of which 111 were prohibited species.

Market, nursery and online marketplace monitoring

Many of the weed infestations across Queensland are the result of escaped or dumped ornamental garden plants. Biosecurity and local government officers have been working to raise awareness of invasive cacti and other plant species that are regulated under the Act. Plant traders at markets and roadside stalls are a key target audience for awareness of the biosecurity risks posed by invasive plants and the legislation governing them. Engagement with traders has been identified as an opportunity to ensure people are aware of their general biosecurity obligation and explain any future enforcement if non-compliance with the Act is identified.

Inspections were undertaken at the Farmers Markets, PCYC Markets Toowoomba City and the Carbarlah Country Markets. Biosecurity officers visited plant traders, handing out invasive cacti fact sheets and the Weeds of Southern Queensland book to assist with awareness. No instances of illegal sale or distribution were identified. Surveillance activities will continue, the next one is scheduled in September 2024 to coincide with the Carnival of Flowers.

Left: *An inspection and awareness raising campaign at Toowoomba market.* ***Right:*** *Bunny ears cactus (Opuntia microdasys) offered for sale on Facebook Marketplace*.

Biosecurity officers conduct regular inspections of approximately 180 stalls at Rusty's Market in Cairns to raise awareness of the importance of biosecurity regulations in Queensland, and to intercept the illegal trade of species including ornamental plants and fresh produce including Asian culinary herbs and vegetables. This led to surveillance of more than 40 market gardens in Cairns and the Cassowary Coast, and the detection and subsequent seizure of five cha-om plants.

Biosecurity officers attended the Far North Queensland Local Plant Sellers Day, where there were more than 20 exhibitors from across North Queensland trading and displaying rare and exotic tropical plant species. No regulated species were detected. Biosecurity officers have also undertaken surveillance in several nurseries throughout the state, with one nursery in Central Queensland found to be selling category 3 restricted plant species, which were immediately removed from sale.

Social media is now the primary method of communication for many people, and the use of these platforms to advertise and sell items is widespread. Biosecurity officers continue to undertake online surveillance for the illegal trade of invasive species in Queensland, specifically monitoring gardening and produce enthusiast groups including those involved in sale of south-east Asian herbs and vegetables. This approach assists with real-time monitoring, rapid response and education, and has resulted in regulated species being removed from sale. Unfortunately, there are limitations to the approach and often the persons of interest can't be identified or located due to privacy concerns.

Online monitoring is currently conducted by biosecurity officers (very time consuming), however continual advances in technology such as machine learning (University of Adelaide have developed a web scraping tool with algorithms trained to recognise keywords associated with the trade of invasive species) and data analysis to track and identify illegal sales and suspicious posts will assist in the future.

Response

Biosecurity Queensland, in partnership with stakeholders, has eradicated or prevented 41 invasive species from establishing, (including one managed as a nationally cost-shared eradication project). A further 40 species are being managed towards eradication, with 23 in the proof-of-freedom phase and 10 in the control phase. Seven species are being managed under national cost-sharing arrangements (not funded by the Land Protection Fund).

Invasive species eradicated or prevented from establishing in Queensland

1. Anchored water hyacinth (*Eichhornia azurea*)
2. African hedgehog (*Atelerix albiventris*)
3. Alligator snapping turtle (*Macrochelys temminckii*)
4. American corn snake (*Pantherophis guttatus*)
5. Asian box turtle (*Cuora amboinensis*)
6. Boa constrictor (*Boa constrictor*)
7. Blind cactus (*Opuntia rufida*)
8. Bunny ears cactus (*Opuntia microdasys*)
9. Burmese python (*Python bivittatus*)
10. Californian kingsnake (*Lampropeltis getula*)
11. Catechu (*Senegalia catechu*)
12. Chinchilla (*Chinchilla lanigera*)
13. Chinese stripe neck turtle (*Mauremys sinensis*)
14. Chinese pond turtle (*Mauremys reevesii*)
15. Coastal silver oak (*Brachylaena discolor*)
16. Diamondback terrapin (*Malaclemys terrapin*)
17. Eve's pin cactus (*Austrocylindropuntia subulata*)
18. Ferret (*Mustela putorius*)
19. Northern palm squirrel (*Funambulus pennantii*)
20. Green iguana (*Iguana iguana*)

Hermann's tortoise (*Testudo hermanni*)

22. Hognose snake (*Heterodon nasicus*).
23. Horsetails (*Equisteum hymale*)
24. Java pipistrelle (*Pipistrellus javanicus*)
25. Knobthorn (*Senegalia nigrescens*)
26. Leopard gecko (*Eublepharis macularius*)
27. Marmoset (*Callithrix jacchus*)
28. Mexican bean tree (*Cecropia pachystachya*)
29. Mexican feather grass (*Nassella tenuissima*)
30. Panther chameleon (*Furcifer pardalis*)
31. Red-flowering prickly pear (*Opuntia elatior*)
32. Red sesbania (*Sesbania punicea*)
33. Russian tortoise (*Agrionemys horsfieldii*)
34. Saw-scaled viper (*Echis carinatus*)
35. Smooth mesquite (*Prosopis laevigata*)
36. Splendid thorn (*Vachellia robusta*)
37. Spotted pond turtle (*Geoclemys hamiltonii*)
38. Star tortoise (*Geochelone elegans*)
39. Veiled chameleon (Chamaeleo calyptratus)
40. White-lipped pit viper (*Trimeresurus albolabris*)

Nationally cost-shared eradication project:

41. Miconia (*Miconia cionotricha*)

Invasive species currently being eradicated from Queensland – proof of freedom phase

1. Aaron's beard cactus (*Opuntia leucotricha*)
2. Bitterweed (*Helenium amarum*)
3. Black willow (*Salix nigra*)
4. Cha-om (*Senegalia insuavis*)
5. Gorse (*Ulex europaeus*)
6. Grey willow (*Salix cinerea*)

7. Engelmann's prickly pear (*Opuntia engelmannii*)
8. Fever tree (*Vachellia xanthophloea*)
9. Grey-haired acacia (*Vachellia gerrardii*)
10. Karroo thorn (*Vachellia karroo*)
11. Madras thorn (*Pithecellobium dulce*)
12. *Mimosa pigra*
13. Monkey thorn (*Senegalia galpinii*)
14. *Opuntia puberula*
15. Paperbark thorn (*Vachellia sieberiana*)
16. Pencil cactus (*Cylindropuntia leptocaulis*)
17. Red-eared slider turtle (*Trachemys scripta elegans*)
18. Soap pod wattle (*Senegalia rugata*)
19. Squalida (*Chromolaena squalida*)
20. Umbrella thorn (*Vachellia tortilis*)
21. Violet prickly pear (*Opuntia gosseliniana*)
22. Wheel cactus (*Opuntia robusta*)
23. White willow (*Salix alba*)

Invasive species currently being eradicated from Queensland – control phase

1. Bitou bush (*Chrysanthemoides monilifera*)
2. Badhara bush (*Gmelina elliptica*)
3. White ball acacia (*Acaciella angustissima*)
4. Jumping cholla (*Cylindropuntia prolifera*)
5. Mexican bean tree (*Cecropia peltata*)
6. Mexican bean tree (*Cecropia palmata*)
7. Tropical soda apple (*Solanum viarum*)
8. Riverina pear (*Opuntia elata*)
9. Snake cactus (*Cylinropuntia spinosior*)
10. Sulphur cactus (*Opuntia sulphurea*)

Nationally cost-shared eradication projects:

11. Limnocharis *(Limnocharis flava)*
12. Miconia *(Miconia calvescens)*
13. Miconia *(Miconia nervosa)*
14. Miconia *(Miconia racemosa)*
15. Mikania *(Mikania micrantha)*
16. Red witchweed (*Striga asiatica*)
17. Electric ants (*Wasmannia auropunctata*)

(nationally cost-shared projects are not funded by the Land Protection Fund).

Invasive species being managed towards eradication, eradicated or prevented from establishing in Queensland.

Early detection and subsequent control of invasive species is more cost effective than dealing with established populations, and the chances of success are significantly higher when the population is small and localised. Rapid response can also prevent incursions from spreading, reducing the overall impacts and increasing the likelihood of eradication. Nevertheless, eradicating naturalised populations of invasive species often requires many years of meticulous surveillance to ensure all individuals are removed and any soil seed bank is exhausted.

Ideally, potentially invasive species should be detected before they escape captivity or cultivation. Once naturalised, the cost of eradication increases exponentially with the search area, making eradication less feasible. If an invasive species becomes firmly established over a significant area, its population becomes highly resilient and generally impossible to eradicate. Therefore, there is a narrow window of opportunity to eradicate a new invasive species while its population is still small and vulnerable.

Left: *A remotely piloted aircraft (RPA) prepares to survey for white ball acacia at Calcium near Townsville.* ***Right:*** *Foliar control of white ball acacia at Walkamin*.

If a decision is made to pursue eradication, the project commences with the control phase. This requires all individuals of the species to be detected and destroyed to prevent population recruitment. This phase ends when there have been no detections for a specified number of years.

During the proof of freedom phase, scheduled surveillance is completed to ensure all animals have been destroyed, or to detect and destroy all juvenile plants prior to seed set. The proof of freedom phase can continue for several years (depending on the life cycle of the species and seed longevity) to ensure that any remaining individuals are detected and destroyed. Detailed records of detections are maintained by the Queensland Herbarium and Biosecurity Queensland, and proof of freedom surveillance of these historical detection sites provides confidence that these species have been eradicated from the state.

Of note, in the last 12 months several eradication response projects have proceeded from the control phase to the proof of freedom phase. While there is always a risk of new detections, this is important progress towards eradication of these species from Queensland.

Eradication projects – control phase

Badhara bush eradication project

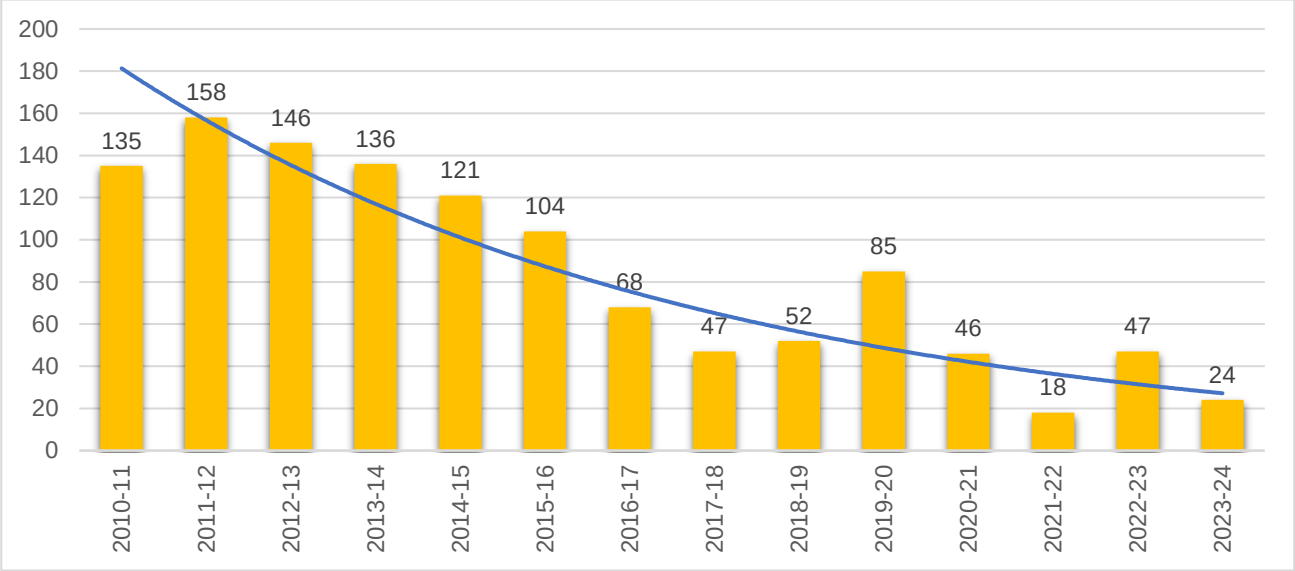
Native to Asia, badhara bush (*Gmelina elliptica*) is an aggressive thorny shrub which forms dense impenetrable thickets. It shades out useful pasture species, prevents stock movements and has significant impacts on natural areas, thus decreasing biodiversity. Infestations are hard to eradicate as plants can reshoot from root stock years after being treated chemically or mechanically. Distribution in Queensland is limited to three areas which have been a focus of strategic control and eradication efforts for many years.

The largest infestation is located on several properties near Stanage Bay, 170 kilometres north of Rockhampton. The focus of control efforts has been on extirpation from properties with limited numbers of badhara bush. To achieve this, on ground vehicles and foot surveys were completed over 233 ha on the southern boundary of the infestation. One hundred and thirty plants were treated with 44 plants detected in a 102ha area that had not been surveyed in over 15 years. A range of control methods were utilised, depending on the location and size of the plants. Larger plants were foliar sprayed with a glyphosate and metsulfuron-methyl mixture while plants located in scrublands were either cut stumped with Vigilant II or hand pulled. Some small immature plants were found in previously clean areas due to seed dispersal via birds, and there were several plants that had regrown after herbicide treatment.

Left: *A biosecurity officer in front of a thicket of badhara bush prior to chemical control.* ***Right:*** *Badhara bush can reshoot and form thickets years after chemical treatment*.

Bitou bush eradication project

Biosecurity Queensland has been coordinating Queensland's bitou bush eradication project since 1981 in partnership with local governments, traditional owners, State government agencies, community groups and private companies. Bitou bush is a native of South Africa and readily invades coastal dune vegetation where it can out-compete, and in many cases eliminate, native flora. Bitou bush has been detected from Bundaberg to the Queensland – New South Wales border, particularly on the major islands of Minjerribah (North Stradbroke Island), Mulgumpin (Moreton Island) and K'gari. There were 24 sites where bitou bush was detected and controlled in the reporting period, 17 of which contained immature plants.



Bitou bush detections by financial year.

As part of the effort to ensure bitou bush is not established outside of known locations, surveillance was conducted on foot from Burnett Heads to Elliot Heads, a distance of over 28 kilometres. Bitou bush has been historically recorded at Mon Repos and is known to occur at both K'gari and Rainbow Beach. There were no detections during this surveillance. No bitou bush was detected at World Heritage listed K'gari for the fourth consecutive year.

Surveillance of Noosa and Cooloola National Parks was completed twice. One active site was detected at the southern end of Teewah Beach. No bitou bush was detected at Noosa National Park for the third consecutive year. Queensland Parks and Wildlife Service (QPWS) are leading the project in the northern area by using experienced contractors to compliment surveillance conducted by the multi-agency teams, with excellent results.

Sites at Minjerribah were surveyed twice, with surveillance focused on coastal areas of the island. Minjerribah still has the largest number of viable sites in Queensland, however the number of viable sites continues to decline annually due to regular surveillance and control. This year's aerial surveillance operation focussed on Minjerribah. Biosecurity Queensland partnered with QPWS to conduct surveillance of inland areas of Minjerribah, which are difficult to access from the ground. No bitou bush was detected during the operation, providing confidence that bitou bush is not growing outside of known areas.

Left: *Firebird 494 departs on a bitou bush surveillance flight.* ***Right:*** *A biosecurity aircrewman surveys for bitou bush on Minjerribah*.

Viable sites at Mulgumpin were surveyed once in the reporting period, with five active sites detected and destroyed. Sites at South Stradbroke Island were inspected twice this financial year with no new detections. Several sites on islands in southern Moreton Bay, including Stingaree, Rat and Crusoe Islands, were declared extirpated following 10 years of surveillance with no detections. Sites at Woogoompa Island continue to support seedling growth and present access challenges to survey teams.

City of Gold Coast Council undertakes proactive surveillance of areas identified to be at risk from bitou bush, helping to protect Queensland's southern coastline from bitou bush reinvasion from New South Wales. Biosecurity Queensland continues to have representation on the committee which overseas strategic management of bitou bush in the northern containment zone of New South Wales. Since establishment of the containment zone over 10 years ago, bitou bush infestations in the zone have been reduced, which helps to prevent seed dispersal into Queensland.


Left: *The key diagnostic feature of bitou bush is the yellow, daisy-like flower.* ***Right:*** *A Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC) vessel deploys a bitou bush surveillance team*.

Jumping cholla eradication project

Jumping cholla (*Cylindropuntia prolifera*) is native to California and Mexico and is a highly invasive cactus that presents a risk to agricultural productivity and the environment. Infestations occur near Barcaldine, Longreach, Stonehenge and Winton, with Biosecurity Queensland supporting local governments and landholders to manage and progressively reduce these infestations.

An infestation on a property 25 km east of Barcaldine was first detected in September 2022. Preliminary delimitation of an area of 700 ha resulted in over 500 plants being detected and herbicide treated. Surveillance and control continued through 2023-24, with a control taskforce undertaken in October 2023 involving Biosecurity Queensland and local government officers from Barcaldine, Longreach and Boulia Shire Councils. Although pulled gidgee scrub and heavily grassed terrain caused difficulties, scattered plants and clumps were herbicide treated over 1,000 ha.

Biosecurity Queensland has also provided support to Longreach Regional Council, Winton Shire Council and Barcoo Shire Council with strategic control of their jumping cholla infestations. This included on-foot activities to survey cactus in areas inaccessible by vehicles. All plants detected were treated with herbicides.

The biocontrol agent cochineal mealy bug (*Dactylopius tomentosus*) has previously been introduced to the Barcaldine infestation and released at other sites – it has particularly become well established on infestations in the Longreach area. It is hoped the combination of herbicide control and biocontrol will effectively contain jumping cholla. To gain better control of the situation over these infestations, regular delimitation surveillance and control program is ongoing with landholders and Local Government officers.

Left: *A local government officer foliar sprays dense jumping cholla east of Barcaldine.* ***Right:*** *Cochineal biocontrol has successfully established, impacting the Barcaldine infestation*.

Mexican bean tree eradication project

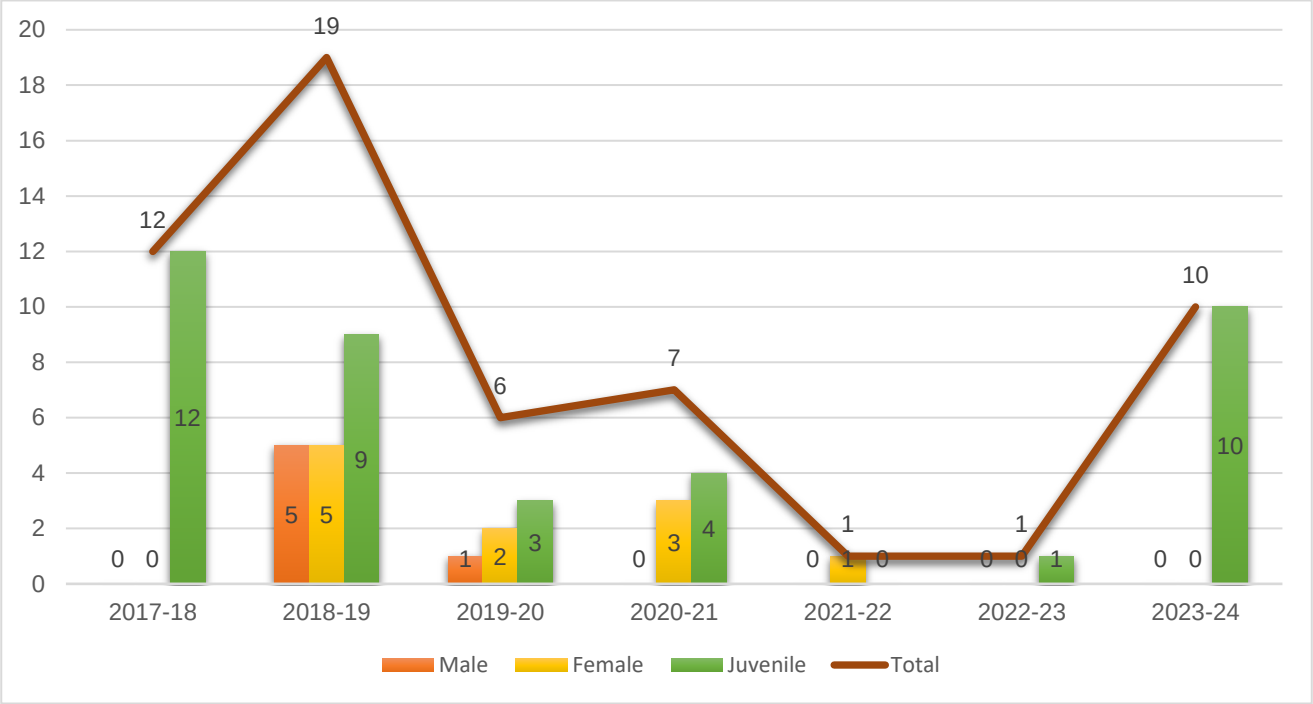
Mexican bean trees (*Cecropia peltata* and *C. palmata*) threaten Queensland's ecologically significant rainforest areas and can readily form invasive wild populations that replace native vegetation. Mexican bean trees are native to central America and are an aggressive coloniser capable of rapid growth up to 25 metres in height. Mexican bean trees tend to be among the first species to occupy creek banks, edges of rainforests and forest areas altered by human activity or storm events. Both species of Mexican bean trees are subject to eradication projects, with a third species (*C. pachystachya*) eradicated from Queensland.

Biosecurity officers have further developed the capability to conduct aerial surveillance for Mexican bean trees utilising remotely piloted aircraft (RPA). Mexican bean trees have distinctive large leaves which, when combined with their rapid growth and height, make them a conspicuous and a suitable candidate for aerial detection. Working in conjunction with DAF's Chief Remote Pilot, biosecurity officers can now conduct aerial surveillance using Extended Visual Line of Sight (EVLoS), enabling effective aerial surveillance over approximately 90% of the Mexican bean tree infestations in the state.

As these skills and techniques are refined, the transition from ground surveillance to unmanned aerial surveillance is expected to yield significant time savings.

Left: *This image shows the significant variation in leaf shape of Mexican bean trees.* ***Right:*** *Surveillance and control activities at Silkwood*.

There are 31 sites in Central and South-east Queensland where Mexican bean trees have been detected. Final inspections were completed at Bundaberg and Glenview following nine years of surveillance. These sites joined 13 sites that had previously been declared eradicated. Of the 31 detection sites, 15 sites have now been declared eradicated. In addition, a historic site in Logan City has been surveyed to confirm there are no plants present.



Mexican bean tree detections in South-east Queensland.

Biosecurity officers, in partnership with local governments and landowners, continue to undertake scheduled surveillance to detect any germination at the remaining sites. Ten juvenile trees were detected and removed from sites in Currumbin Valley. All plants were assessed to be under 12 months of age by counting leaf scars. The detection and control of juvenile plants remains essential in preventing seeding events and keeping the eradication project on track.

Left: *A biosecurity officer assesses the age of a juvenile Mexican bean tree.* ***Right:*** *Biosecurity officers inspect the forest canopy for signs of Mexican bean trees*.

Riverina pear eradication project

***Left:** Riverina pear prior to treatment. **Right:** inspecting Riverina pear following control.*

Riverina pear (*Opuntia elata*) can rapidly invade natural areas and pastures, reducing productivity and stock-carrying capacity. The spines can also cause injury to livestock, humans and native animals. An infestation was first reported to Biosecurity Queensland in 2015 at a property 25 km north of Blackall in Central-western Queensland. The landholder is managing the site with support from Biosecurity Queensland, and the cacti is now sparsely distributed on the property.

In October 2023, an infestation was found on an adjoining property downstream from the original infestation. Delimitation surveillance of this new site was undertaken by the landholder and biosecurity officers with approximately two hundred plants, being detected and treated with herbicide. Further delimitation surveillance will be required of the area including the riparian zone.

Riverina pear is also distributed across sites in Mitchell, Mungallala and Morven. Maranoa Shire Council staff in conjunction with Biosecurity Queensland are actively managing the Mitchell and Mungallala areas. In Mitchell, 24 plants were found across the stock routes, common and council lands, with five plants detected on private property. 80% of the plants have been eradicated. In Mungallala, 132 plants were found along Mungallala Creek and treated with herbicide, with approximately 70% of plants controlled. It is expected that Riverina pear will be present on surrounding properties, and surveillance and community education continue to increase awareness and facilitate reporting of new infestations.

Snake cactus eradication project

Snake cactus (*Cylindropuntia spinosior*) is a multi-branched shrub that can form dense infestations, competing with native vegetation and potentially reducing pastures. It is native to Arizona and New Mexico in the US and in northern Mexico. In Queensland, snake cactus has been found around Longreach, and historically at a homestead south-east of Wyandra.

A recent survey of the abandoned homestead and a 5 km radius by Biosecurity Queensland and Paroo Shire Council officers located 168 snake cacti which were controlled with herbicide. Additional surveillance and treatment will be required, and this highlights the risks that can be posed by ornamental plants that escape from gardens into suitable natural habitat.

A project to manage a large infestation of snake cactus on a property north of Longreach is being led by Longreach Regional Council. Longreach Regional Council have coordinated spray treatments to reduce the infestation as well as management burns to improve site accessibility and cacti detectability. Biosecurity Queensland scientists and biosecurity officers have supported the project through introduction and monitoring of cochineal biocontrol agents.

Biosecurity officers chemically controlling invasive cacti.

Sulphur cactus eradication project

Sulphur cactus (*Opuntia sulphurea*) is a low spreading shrub with multiple stems that can form patches 1-2 metres wide. It can impact ecosystems, waterways and agriculture and has the potential to spread across vast areas of suitable habitat within Queensland.

An incursion of sulphur cactus has been detected in the Wallumbilla district. Biosecurity Queensland has assisted Maranoa Shire Council to develop and implement an eradication program. Crown lands surrounding Wallumbilla have been surveyed, with 34 sulphur cacti detected. Letters and facts sheets have been distributed throughout the district, along with social media posts. As a result, two properties contacted council requiring assistance with eradication, and approximately 45 plants were detected and treated with herbicide. Assessment of treated sites indicates that the herbicide application has been successful, with approximately 75% of *O. sulphurea* dead or dying.

Tropical soda apple eradication project

Native to South America, tropical soda apple has been described as the “weed from hell”, presenting a significant risk to Queensland’s agriculture, economy and environment. Tropical soda apple is highly adaptive, growing in a range of environments, and can produce fruits containing hundreds of seeds in a short life cycle. Tropical soda apple can form heavy infestations where the dense thorny leaves and stems can reduce stock carrying capacity and prevent native animals and livestock from accessing shade and water. Tropical soda apple fruit are readily consumed by livestock, birds and feral animals, with seeds remaining viable after passing through the gastrointestinal tract.

Widely established in northern NSW, tropical soda apple was first detected in Queensland at Coominya in 2010. A significant infestation was detected at Ebenezer in 2012, and detections of a small number of plants have also been recorded at Wandoan, Warwick and Junabee. A major new

detection occurred in 2024 at Beenleigh. The infestation in Coominya has been successfully treated, with no tropical soda apple plants detected at this site since 2022, when two plants were detected within the detention basins from on-site washdown pads. This site will remain a sentinel site, with annual inspections to continue.

Ongoing surveillance and control work has continued at the Ebenezer site with an increase in detections reported for the 2023-24 period. Slashing by the property owners, along with ongoing rain and warm weather have been favourable for the emergence of plants. Although a high number of plants have been detected at this site, the detections continue to remain within historic areas and the majority are of seedlings and small plants with no reproductive material present.

In April 2024, biosecurity officers inspected an abattoir in Beenleigh as part of scheduled preventative surveillance. This inspection detected a significant infestation of tropical soda apple consisting of emergent seedlings through to large mature bushes.

Delimitation surveillance of high-risk areas at the site including cattle holding and livestock unloading areas has been completed, with further delimitation of this site and surrounding properties to be undertaken later in 2024. Biosecurity Queensland is supporting the affected business to meet their general biosecurity obligation with assistance from Logan City Council.

Left: *Persistent warm weather and regular rain events have promoted the germination of tropical soda apple.* ***Right:*** *Tropical soda apple plants detected at Beenleigh. Preventative surveillance remains a priority to detect any new tropical soda apple incursions early*.

Preventive surveillance of cattle processing businesses has been undertaken at sites in Ipswich and Rockhampton with no tropical soda apple plants detected. Biosecurity Queensland remains a member of the Tropical Soda Apple Taskforce, administered by NSW Department of Primary Industries. The purpose of the taskforce is to coordinate surveillance and control activities, develop and share regulatory processes to support management of infestations, and review progress of the NSW tropical soda apple response plan.

In conjunction with the Taskforce, Biosecurity Queensland has co-contributed to the development of the Tropical soda apple Best Practice Manual, which is available online via the NSW DPI website, and can be used as a guide for identification of plants, weed hygiene, control methods and disposal guidelines.

White ball acacia eradication project

White ball acacia (*Acaciella angustissima*) is a thornless shrub or small tree native to tropical and subtropical America. It has the potential to invade natural habitats, forming dense thickets that can outcompete native vegetation and pastures, and is ideally suited to north Queensland's dry tropics, extending to subcoastal and coastal southern Queensland.

Left: *This image shows the bipinnate leaves, hairless stems and whitish flower clusters of white ball acacia.* ***Right:*** *White ball acacia has the potential to form dense thickets and outcompete native vegetation*.

White ball acacia was planted at agricultural trial sites throughout Queensland in the 1970s and 1980s to investigate its potential as a forage legume. It has a hard coated seed and a long seed life of more than ten years. It has spread from these trial sites by water, machinery and animal movements.

Biosecurity Queensland is leading the response in North Queensland on sites across six local government areas. There are project sites at Walkamin, Rocky Creek and Southedge in the Atherton Tablelands, and at Nome, Douglas, Harvey's Range, Hillgrove and Calcium in the coastal dry tropics region. Biosecurity Officers continue to consult broadly with stakeholders (property owners, CSIRO, JCU, Department of Resources, DAF colleagues and local government) to follow up additional historic grazing sites, including those in the Cassowary Coast region.

Left: *A biosecurity officer using a drone for white ball acacia surveillance.* ***Right:*** *Chemical control of scattered white ball acacia plants*.

A biosecurity officer foliar sprays white ball acacia at Parkhurst.

There are currently two infestations being managed in Central Queensland, located just north of Rockhampton in Parkhurst and Etna Creek. At Parkhurst, an initial round of control was undertaken by biosecurity officers with approximately 285 plants foliar sprayed or basal barked over a 0.8 ha area. Surveillance was also undertaken over 2.2 ha on the eastern boundary of the infestation.

The Etna Creek site was identified in April 2024 following active surveillance of former DPI trial sites. Delimitation surveillance determined the infested area to be approximately 1.3 ha. Initial control operations focussed on outlying populations, detecting and treating approximately 15 mature plants and over 150 seedlings covering 0.5 ha in total.

Eradication projects – proof of freedom phase

Madras thorn eradication project

Madras thorn (*Pithecellobium dulce*), also known as Manila tamarind or monkeypod, was first introduced into Queensland in the 1980s. It is a fast-growing tree that has generally been planted as an ornamental and is also suitable for Bonsai. As the plant has spread through south-east Asia it has also been adopted for culinary use, and in recent times it has been more regularly detected in gardens where it is being grown as a vegetable. Uncontrolled populations of Madras thorn can form dense thickets and out-compete native vegetation and pasture. Madras thorn is believed to be largely eradicated from Cairns, Innisfail, Mareeba and Townsville however the known distribution has recently expanded to include Weipa and Normanton.

In Weipa, Madras thorn was detected alongside cha-om in a garden and subsequently destroyed. In Karumba, sentinel surveillance identified madras thorn vegetive material amongst other green waste at the transfer station, and investigations into the origin of this restricted matter continues. A sponsored social media campaign was released to target specific landholders in Cairns, Mareeba and Innisfail. The campaign reached a total audience of 198,859 people, re-enforcing the message that Madras thorn is an invasive species that is illegal to cultivate, and that any detections should be immediately reported.

Mimosa pigra eradication project

Mimosa pigra was detected on the margins of Peter Faust Dam (Lake Proserpine) in 2001 and remains the only known occurrence of this weed in Queensland. It is recognised that without control, *M. pigra* will have significant impacts to agriculture, the environment and social amenity. Since its detection, the infestation has been the focus of a response program led by Biosecurity Queensland in conjunction with Whitsunday Regional Council, Sunwater, the landowner and other stakeholders.

Although no known infestations now exist at Peter Faust Dam, surveillance continues to occasionally detect immature plants germinating from (and depleting) the long-lived residual soil seedbank. Surveillance is conducted by side-by-side vehicles (SSV), with location data recorded for any detections. In addition to routine surveillance that occurs year-round, a joint Biosecurity Queensland-Sunwater taskforce survey was conducted in September 2023 to intensively survey at-risk creeks and gullies not accessible by SSV.

In 2023-24 there were two detections of *M. pigra* – both immature (non-seeding) plants which were immediately destroyed. This provides a degree of proof of freedom confidence that there are no mature plants or infestations present within the project area and contributes to long term eradication objectives.

Left: *Surveillance of the Peter Faust Dam shoreline using a side-by-side vehicle.* ***Right:*** *Biosecurity officers survey a creek feeding into the dam.*

Opuntia puberula eradication project

Biosecurity Queensland works closely with relevant local government officers to undertake surveillance and control of *Opuntia puberula*. Native to South America, *O. puberula* is an erect, spreading, multi-stemmed shrub that can grow to over 2 metres in height. It reproduces by stem fragments which become attached to animals, footwear and vehicles and are also dispersed via dumped garden waste. It has been detected in areas including Brisbane, the Gold Coast and Mackay.

In 2023-24, a Bulloo Shire Council officer conducting general biosecurity surveillance in Thargomindah observed four plants on a property in town. The plants were formally identified by the Queensland Herbarium, and a biosecurity officer physically removed one plant, and chemically controlled the remaining three (could not be physically extracted from the site).

Left: *Opuntia puberula control.* ***Right:*** *A biosecurity officer treating O. puberula cacti detected in a garden in Thargomindah*.

Additional plants were detected by Bulloo Shire Council officers on a station approximately 140 km north-west of Thargomindah. The officers were releasing cochineal biocontrol agents on coral cactus (*Cylindropuntia fulgida*) when they discovered the infestation. Delimitation surveillance by Council and Biosecurity Queensland officers located seven plants which were chemically treated, and monitoring will continue to ensure all individuals have been controlled.

This is an impressive example of state and local government officers working collaboratively to reduce the risk of spread of prohibited biosecurity matter.

Squalida eradication project

Squalida (*Chromolaena squalida*) was discovered at Warrami in 2020. Biosecurity officers controlled all plants and continue surveillance to support the eradication of this invasive species. Surveillance timeframes are based on the species life cycle and there were no detections in 2023-24. There have not been any reproductive events at the site since early 2020, and no detections since late 2021.

Strategic Management

Biocontrol agent monitoring and distribution

Biological control involves the use of exotic insects and pathogens to reduce the vigour, size, and competitiveness of target invasive weeds. Biological agents provide an important control measure where other options are not viable, as well as complementing other control efforts. Once established on individual plants, adult insects provide a continual supply of new insects to attack new growth and surrounding plants. The natural process of spread can be assisted to ensure biological control agents establish in geographically isolated weed infestations. Biosecurity officers, scientists and local government officers have continued to propagate and distribute biological control agents for various cacti and other weeds.

Biosecurity officers sourcing biocontrol weevils in salvinia at Rockhampton for redistribution.

Monitoring of cochineal releases for drooping tree pear (*Opuntia monacantha*) at Slade Point near Mackay have shown successful establishment of the agent, with multiple plants showing signs of damage. Additional material was released during monitoring to increase the spread of the agent. The drooping tree pear cochineal was also introduced to infestation sites at Shoal Point (north of Mackay) and Midge Point (south of Proserpine), with monitoring to be conducted over the next 12 months.

Biocontrol agents for harrisia cactus (*Harrisia* spp.) have been collected from field sites at Emerald and Alpha and released at sites at Bauhinia Downs and in the Taroom area as well as along the Barcoo River at Blackall. Collection of both healthy and infected harrisia cactus samples to support ongoing science projects remains a priority, as does the cross-regional distribution of control agents within central and southern Queensland.

There are two species of cacti known by the common name Hudson pear, *Cylindropuntia pallida* and *C. tunicata*. Hudson pear is highly invasive and is considered one of the most damaging of the invasive cacti, significantly reducing agricultural productivity, impacting the environment, and preventing many forms of outdoor recreation.


Left: *Biosecurity officers inspect Hudson pear within an enclosure at Wilkesdale for signs of damage from biocontrol agents.* ***Right:*** *A biosecurity officer releases cochineal infected cladodes into a velvety tree pear at Charleville*.

Biosecurity Queensland has partnered with NSW DPI and Walgett Shire Council to obtain biocontrol agents for both species of Hudson pear, which are being bred at a variety of biocontrol nurseries throughout the state. It is important to correctly identify the species of cacti being targeted as the biological agents are species-specific. Fresh plant material is collected from the field, and material infected with the agents has been released at sites across central and southern Queensland.

Biosecurity and Barcaldine Regional Council officers distributed cochineal for tiger pear (*Opuntia aurantiaca*) at Barcaldine, Jericho and Alpha and for jumping cholla (*Cylindropuntia prolifera*) across the Barcaldine project sites. Cochineal for velvety tree pear (*O. tomentosa*) has also been distributed in reserve land north of Blackall and on Westwood pear (*O. streptacantha*) near Biloela and Monto. This will provide the basis for a field collection site for ongoing distribution in the local area.

In southern Queensland, Biosecurity Queensland has been working with local governments to maintain a nursery of cochineal for distribution to a range of catus species including tiger pear (*O.aurantiaca*), velvety tree pear (*O. tomentosa*), prickly pear (*O. stricta*) and coral cactus (*C. fulgida*). Workshops were also held to provide practical demonstrations on the process for effectively distributing cochineal.

Water lettuce is a free-floating aquatic plant that was introduced to Australia as an aquarium and water-garden plant and has subsequently escaped into natural waterbodies where it forms dense infestations on the surface, affecting water flow, oxygenation and damaging native ecosystems.

Biosecurity Queensland organised the collection of Water lettuce weevil, *Neohydronomus affinis* from Rockhampton Regional Council to utilise in the Warrego River Water lettuce incursion in Cunnamulla. The weevil lays eggs in the fleshy leaves of the water lettuce and larvae tunnel through the plant tissue allowing fungi and bacteria to enter the plant and cause it to rot.

Paroo Shire Council has established a breeding program for *N. affinis* by growing the host plant into a modified water tank. *N. affinis* reproduces rapidly and is then distributed directly into the Warrego River infestation, with preliminary results showing a significant effect from this small operation.

Cereus uruguayanus is a species of large, standing cactus that has become weedy across Queensland. A cochineal initially introduced for harrisia cactus (*Harrisia martinii*) has been identified as impacting Cereus cacti in South Africa. Biosecurity officers introduced the cochineal into stands of willows cactus near Durong. The cochineal is still active in the field and monitoring of the infestation is being undertaken to assess the effectiveness of the agent on this species.

Left: *Cochineal biocontrol nursery at Charleville.* ***Right:*** *Paroo Shire Council officer and water lettuce weevil breeding colony at Cunnamulla*

Taskforces

Ballone Shire Council *Harrisia martini* management program

Biosecurity officers partnered with Ballone Shire Council officers to target Harrisia cactus populations on two grazing properties at St George and Dirranbandi. The cactus was controlled with herbicide, with control efforts targeted due to the proximity to major creek systems. Monitoring and control at these sites will continue.

Cook Shire Council gamba grass taskforce

Biosecurity officers assisted Cook Shire Council and Cape York Natural Resource Management (NRM) Group with the 'Cooktown Gamba grass taskforce' activity, providing specialist skills in spatial data management and mapping. The annual weeklong taskforce held at Cooktown in April was affected by weather, however still resulted in 20 participants contributing over 80 person days undertaking gamba grass surveillance and control. Collaborators included Cook, Tablelands, Hinchinbrook, Cairns and Douglas local governments, as well as Department of Resources, Queensland Parks and Wildlife Service and Cape York NRM.

Mareeba Shire Council bellyache bush taskforce

Biosecurity officers assisted Mareeba Shire Council and landholders to help maintain a buffer zone between the Mitchell River and the Staaten River catchment area. Equipment, specialist data management and mapping skills were provided during the weeklong taskforce. A buffer zone 25 km long and 2 km wide continues to be maintained.

Water mimosa eradication project

Water mimosa (*Neptunia oleracea* and *N. plena*) is native to tropical Asia, Africa and South America and is cultivated as a vegetable throughout south-east Asia. It is an aquatic floating perennial herb that has the potential to invade Queensland's waterways and wetlands.

Due to its appeal as an Asian vegetable, there are multiple waterways within northern Queensland where water mimosa has been detected, with two sites in the Burdekin that require long-term monitoring. Biosecurity and Burdekin Shire Council officers undertook routine monitoring at these two sites, with no detections. Routine surveillance will continue to ensure no further re-infestation occurs.

***Left:** A water mimosa site in North Queensland. **Right:** A biosecurity officer undertaking cut stump control of rubber vine on the Warrego River.*

Murweh Shire rubber vine project

A biosecurity officer identified an incursion of rubber vine (*Cryptostegia grandiflora*) along the Warrego River in Charleville. Rubber vine is a vigorous woody-perennial vine that is a significant weed in northern Australia.

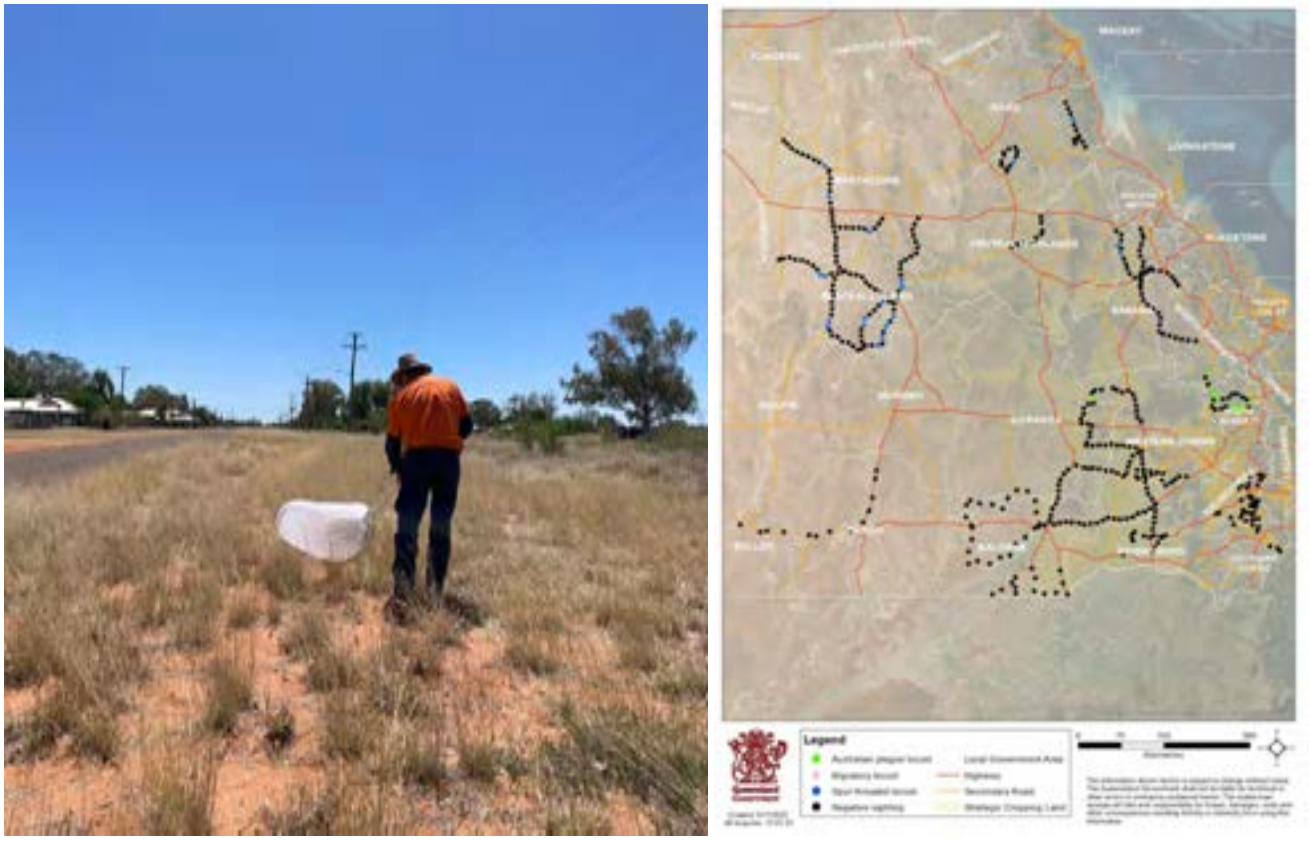
An area along the riparian zone of the Warrego River was surveyed, with 54 plants detected. The majority of plants were controlled, and subsequent surveillance detected another two plants in the vicinity. Monitoring of this site will continue to ensure rubber vine does not continue to spread.

Locust surveillance

Biosecurity Queensland monitors populations of the three economically important locust species, Australian plague locust (*Chortoicetes terminifera*), migratory locust (*Locusta migratoria*) and spur-throated locust (*Austracris guttulosa*). These locusts are native species but can have a significant impact on agricultural production.

Biosecurity officers undertake surveillance, including preliminary assessments of species, abundance and distribution. This provides an early warning system alerting landholders and other stakeholders of emergent and increasing numbers that could lead to locust outbreaks in the strategic cropping areas of central and southern Queensland.

Biosecurity officers also provide technical advice to local governments and landholders on the control of locusts and may support strategic control of locusts where there is a significant risk to strategic cropping lands from locust migration. Good rainfall leading to increased vegetative growth is a prerequisite for locust population increase (require moist soil to lay eggs and emerging nymphs require green grass to survive).



Left: *A biosecurity officer conducting locust surveillance along a roadside.* ***Right:*** *Map of locust surveillance transects completed in spring 2023 across Queensland*.

Systematic surveys occur throughout the warmer months from September through to April. Seasonal conditions during this period were highly variable, with exceptionally dry conditions in the late winter and early spring of 2023 giving way to widespread heavy falls across much of the survey zone through late spring and summer.

In central Queensland, surveillance was completed across the Central Highlands and Capricornia regions, including the Dawson-Callide, Sarina-Marlborough, May Downs, Capella, Comet and Kilcummin districts. Very low densities of locusts were found across the surveillance zone.

Surveillance was also completed in the migration corridors in central and southwestern Queensland from Alpha to Winton, south to Cunnamulla and as far west as Thargomindah. Isolated densities of locust were found sporadically through the surveillance zone.

In southern Queensland, surveillance was completed across the Warrego, Maranoa, Darling Downs Granite Belt, including St George, Dirranbandi, Bollon, Goondiwindi, Meandarra, Cunnamulla, Roma, Dalby, and Wandoan districts. No reportable levels of locusts were found in the surveillance zone.

Due to the variable seasonal conditions, surveillance was limited in the south-east of the state to focus on the North and South Burnett regions. While only low numbers of locusts were found in this survey area, it greatly increased confidence knowing the eastern flank of the strategic cropping area was secure.

Education, awareness and capacity building

Biosecurity workshops and engagement activities

Biosecurity Act 2014 Regulatory Workshops

Biosecurity Officers planned and conducted *Biosecurity Act 2014* regulatory workshops at Townsville and Cairns for 30 local government officers representing ten local governments. The workshop aimed to refresh participants knowledge and equip them with necessary skills to effectively regulate the Act within their respective local government areas.

These workshops proved to be a valuable learning experience for participants. The well-structured content, engaging delivery methods, and a focus on practical application improved participants knowledge and skills to confidently fulfill their regulatory roles.

Biosecurity Act regulatory workshops at Cairns and Townsville.

Four workshops were delivered to 26 local government officers across seven councils in southern Queensland. Training occurred in Charleville, Roma, Dalby and Toowoomba and a range of topics were discussed including powers of entry and seizure, legislative frameworks and how to conduct field interviews. The training was scenario-based, and participants reported an increase in knowledge on compliance processes, fair and reasonable application of the Act and how to record evidence.

Biosecurity Act regulatory workshops at Roma.

Cacti masterclasses

Cacti Masterclasses have been held across Queensland over several years to enhance regional capacity for the early detection of invasive cacti species. In November 2023, Biosecurity Queensland coordinated a Masterclass at Longreach with presentations by Biosecurity Queensland and Department of Environment and Science (Queensland Herbarium). Longreach Regional Council hosted a complementary field tour to a snake cactus (*Cylindropuntia spinosior*) infestation. The event provided the 25 participants with invasive cacti identification skills, information on current research, and management knowledge to enhance regional compliance and surveillance programs.

Left: *Participants inspect snake cactus as part of the Cacti Masterclass at Longreach.* ***Right:*** *Biosecurity officers present at the Nanum Wungthim Ranger meeting at Naprunum*

Indigenous Rangers forum

Biosecurity Queensland participated in the 2023 Northern Australia Indigenous Biosecurity Ranger Forum held in Kurrimine Beach. The forum was a significant gathering of over 250 Indigenous rangers, coordinators, and biosecurity professionals, organised by Mandubarra Aboriginal Land and Sea Incorporated. The three-day event provided a platform for knowledge sharing, skill development and networking.

Biosecurity Queensland delivered training to Indigenous Ranger Organisations including Djabugay Bulmba Rangers, Mamu Rangers, Nanum Wungthim Rangers, Gunggandji-Mandingalbay Yidinji Rangers, Kati Thanda (Lake Eyre Basin) Rangers and Kaurareg Rangers to assist in building their biosecurity capabilities. Training topics included marine pest surveillance, weed management, pest fish and tramp ant luring.

Biosecurity officers provide training to Kati Thanda Rangers at Mt Isa on invasive fish management (left) and tramp ant surveillance (right).

Pest Animal and Weed Symposium

Left: *A biosecurity officer provides information on cactus biocontrol at a PAWS field trip.* ***Right:*** *A presentation on red eared slider turtle eradication.*

The Pest Animal and Weed Symposium (PAWS) was presented by Invasive Species Queensland and hosted in Dalby by Western Downs Regional Council, with two biosecurity officers supporting the statewide organising committee. Biosecurity Queensland provided sponsorship for the event.

Three field trips were run concurrently, with Boyne Dreaming showcasing the Bunya Mountains and Production and Protection showcasing the production industries around Dalby. A biosecurity officer organised and hosted the Way Out West tour, showcasing successful eradication responses including salvinia at Gil Weir, the success of the cactoblastis moth in the 1920s, ongoing management issues including water hyacinth at Horse Creek (with a spray drone demonstration), vertebrate pest management in the region, the rabbit barrier fence, community action against pest fish, and cross species biocontrol sites.

Several biosecurity officers provided presentations and poster displays on a variety of subjects including white ball acacia eradication, surveillance and control tools for red eared slider turtles, *Mimosa pigra* eradication, tramp ant surveillance and the Red Witchweed Eradication Program.

Left: *A biosecurity officer displays a poster on white ball acacia.* ***Right:*** *A biosecurity officer presents on Mimosa pigra eradication.*

Pest fish awareness

Preventing the introduction of high-risk pest fish species (including unwanted pets) from entering and becoming established in waterways is a priority for Biosecurity Queensland. Pest fish disrupt native ecosystems by preying on native species, introducing disease, and competing for resources, leading to a loss of biodiversity. Invasive fish are difficult to detect and monitor, and small populations (such as releases from aquariums) can easily go unnoticed, allowing them to persist and potentially spread - often the first indication of their presence is an individual captured by fishermen. Once established, they can be nearly impossible to eradicate, and early intervention (including prevention and rapid response) is more cost-effective than attempting to eradicate established populations.

Preventative measures include an early intervention project engaging aquariums to support Biosecurity Queensland's public awareness campaign by promoting extension materials focused on the consequences of illegal dumping of aquarium contents into natural waterways, and the timely reporting of detections of high-risk noxious fish. Aquarium owners are encouraged to display extension materials and are incentivised through access to free live-fish transport bags produced by Biosecurity Queensland, which are branded with awareness information. Some aquariums have also agreed to take back unwanted pet fish, reducing the risk of pest fish and aquarium contents being released into the natural environment.

Gold Coast pest fishing classic

Biosecurity Queensland attended the 2023 Gold Coast Pest Fishing Classic to raise awareness about red eared slider turtles and pest fish species. The event was hosted by My Catch Australia and City of Gold Coast to improve local waterways through the removal of invasive species. A red eared slider turtle was caught at this event in 2022, triggering a six-month emergency response and ongoing surveillance.

The Gold Coast Pest Fishing Classic is the biggest pest fishing event in Queensland, with 1,771 participants registered for the day. The event provided an ideal opportunity for biosecurity officers to engage with anglers of all ages and raise awareness about the impacts of invasive species on local waterways. Pest fish species captured on the day included tilapia, European carp, goldfish, mirror carp, Texas cichlids and pearl cichlids, with the catch of exotic fish totalling 828 kg. Fortunately, no red eared slier turtles were reported during the event.

Left: *A biosecurity officer explains the identifying features of red eared slider turtles to an angler at the event.*
Right: *Competitors line up to have their catch weighed*.

South East Queensland Pest Advisory Forum

The South East Queensland Pest Advisory Forum (SEQPAF) was held in Esk in November 2023, following a four-year hiatus due to COVID-19. The event provides an opportunity for scientists and operational staff to share experiences and research findings. The event was attended by 71 invasive species specialists from local and state governments from across south-east Queensland.

This year's presentations were led by Somerset Regional Council's impressive lantana control project, which is achieving incredible results and is a demonstration of how long-term commitment and funding can achieve effective broad-scale control of established invasive species. Biosecurity Queensland presentations included operational eradication projects, parthenium biocontrol research, feral deer research, and recent advances in citizen science surveillance using the iNaturalist network.

The Fire Ant Eradication Program team were also in attendance, with a presentation to update attendees on the threat from fire ants, as well as a display so participants could familiarise themselves with the appearance of fire ants and fire ant nests. The forum also provided an excellent networking opportunity.

Participants at the 2023 SEQPAF.

Shire Rural Lands Officer's Group

Balonne Shire Council hosted the Shire Rural Lands Officer Group (SRLOG) for the first meeting post-COVID. 40 local government officers attended the field day and presentations.

Officers from Western Downs Regional Council, Toowoomba Regional Council, Southern Downs Regional Council, Maranoa Shire Council, Balonne Shire Council, Murweh Shire Council, Paroo Shire Council, Quilpie Shire Council, Bulloo Shire Council and South Burnett Regional Council used the opportunity to learn and network with speakers from Department of Resources, Department of Environment and Science, Department of Transport and Main Roads, Darling Downs – Moreton Rabbit Board, SQ Landscapes and Biosecurity Queensland.

Officers visited the 100 ha coral cactus infestation at Booligar. The size of the infestation has significantly reduced after many years of persistence with herbicide, mechanical and biological control. The coral cactus treatment undertaken by Balonne Shire with guidance from biosecurity officers was also showcased. The field day was then finished with a talk from QMDCL William Taylor on cultural burning practices at 'Euahlayi' outside Dirranbandi, and a visit to the historical dump site at Thallon, where weed management through burning practices is continuing.

The presentation topics included cactus identification, harrisia cactus control, stock routes management, TMR weed App, feral pig control, livestock diseases, rabbit control and emerging weed impacts. Even with the heavy rainfall and road closures, all attendees provided positive feedback and enjoyed the learning and development opportunity.

Participants at the 2023 Shire Rural Lands Officer Group meeting.

Public engagement activities

Biosecurity officers were invited to present a guest lecture and workshop at James Cook University, Townsville. Students were taught about the categories of biosecurity matter, how to identify weeds of the region and biosecurity best practice. As a result of the training, one of the students discovered they possessed an invasive plant species (prohibited matter), allowing biosecurity officers to seize a blind cactus (*Opuntia rufida*).

Biosecurity officers engaged with Charters Towers high school students on two occasions, a presentation to students undertaking a Certificate IV in Agriculture and Rural Industries through the School of Distance Education, and as a participant in the Charters Towers Careers Expo. These platforms helped to raise awareness about invasive species, biosecurity threats and provided students with an opportunity to explore career opportunities within this rewarding field.

South Region biosecurity officers ran a display stand at the Dalby and Roma cattle saleyards to raise awareness about general biosecurity issues, focussing on the risks of seed transfer for species including tropical soda apple (*Solanum viarum*), prickly acacia (*Vachellia nilotica*), parkinsonia (*Parkinsonia aculeata*) and mesquite (*Prosopis spp*.). Dalby and Roma are the largest and most significant cattle selling centres in Queensland, and cattle are transported from areas in northern New South Wales and northern and Central-west Queensland.

The process of quarantining cattle purchased from these locations reduces the risks of introducing weed seeds (transported in the rumen and on coats and hooves of animals) into areas where tropical soda apple and prickle bushes are not established. Placing cattle in holding pens until they clean out is a sensible biosecurity practice, and any weed seeds will germinate in a small, contained area that is easier to manage.

A biosecurity officer raises awareness of invasive weed species at the Dalby saleyard.

LGAQ NRM forums

Biosecurity Queensland supported the Local Government Association of Queensland (LGAQ) Natural Resource Management (NRM) Forums held in May and June 2024 at Georgetown, Cunnamulla, Blackall, New Mapoon and St Lawrence. The forums provided an opportunity for NRM managers and officers to showcase local NRM work, hear from one another about NRM challenges and learnings, and build multi-agency networks. Biosecurity officers presented an overview of regional invasive plant and animal program operations including high priority surveillance, eradication and compliance activities. Multiple local governments were represented at these forums.

Conclusion

The extensive efforts outlined in this report highlight the significant challenges for invasive species management in Queensland. Effective management of these impacts relies heavily on the close collaboration between local, state, and federal governments, as well as community and Indigenous groups.

Biosecurity Queensland is steadfast in its commitment to preventing the establishment of new regulated invasive species within the state. This commitment is demonstrated through the enforcement of stringent legislative restrictions on the importation, trade, and possession of invasive species. In partnership with numerous stakeholders, Biosecurity Queensland is at the forefront of efforts to eradicate 41 invasive species. Achieving eradication is crucial, as it not only prevents future impacts from these species but also safeguards the investments made by all stakeholders throughout the lengthy process of detection, control and proof of freedom until eradication is declared.

Additionally, Biosecurity Queensland continues to support the management of widespread established species by providing local governments and regional groups with expert advice, training, policy guidance, legislation, and cutting-edge research.

Biosecurity officers distribute cochineal biocontrol to a Westwood pear near Biloela.